

Standardization of ewe milk MIR spectra by using cow milk samples

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Context

Interest of the ewe milk supply chain to use MIR spectra of milk to generate new phenotypes about fine milk quality, status of individual animals or technological properties of milk

Necessity to **harmonize the spectra** from different instruments into a common basis in order to constitute common dataset, create common models and be able to use those common models on different instruments

Spectral standardization method already exists for cow milk (Grelet et al., 2015). The method is based on routine analysis by all instruments of **cow milk standard samples**



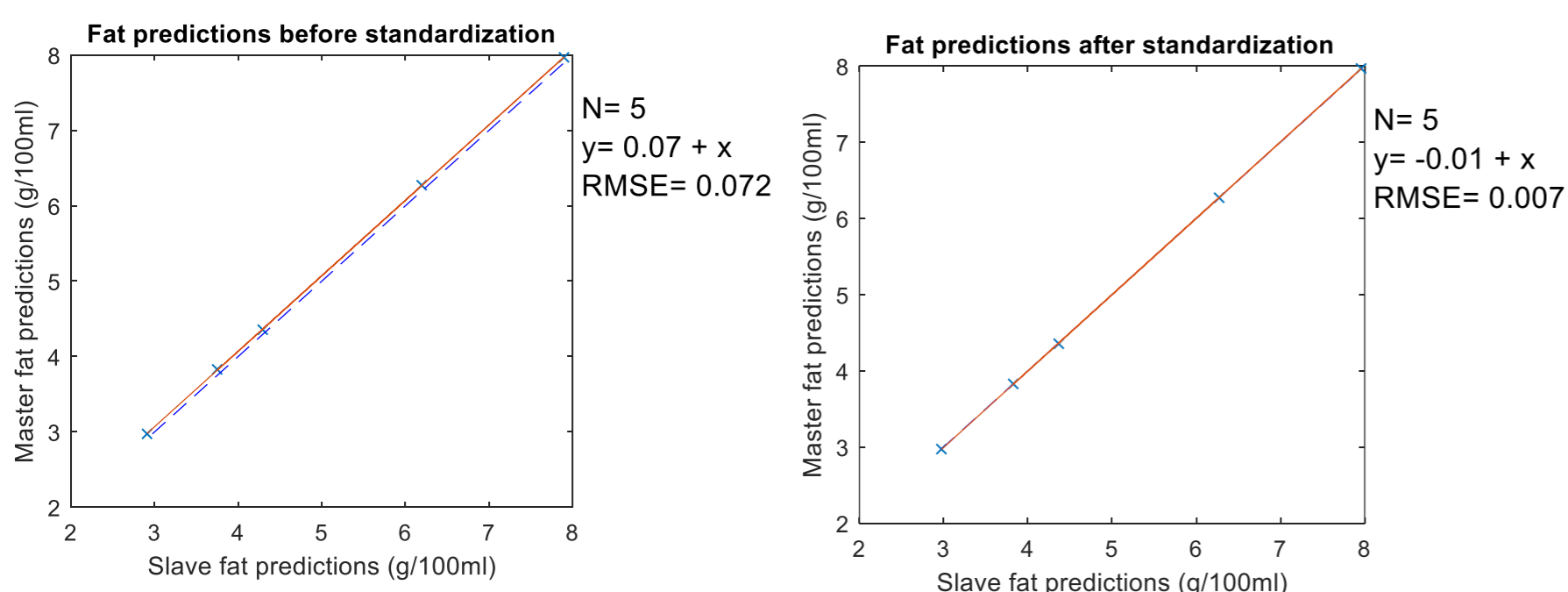
Objective: test whether this standardization method developed on cow milk could be suitable to standardize ewe milk spectra

Results

Generation of standardization coefficients:

both sets of coefficients allow to reduce differences between reference and secondary instruments

Example of standardization of an instrument with ewe milk standard samples:



Difference between reference and secondary instruments reduced by 10

Validation on external ewe milk standard samples:

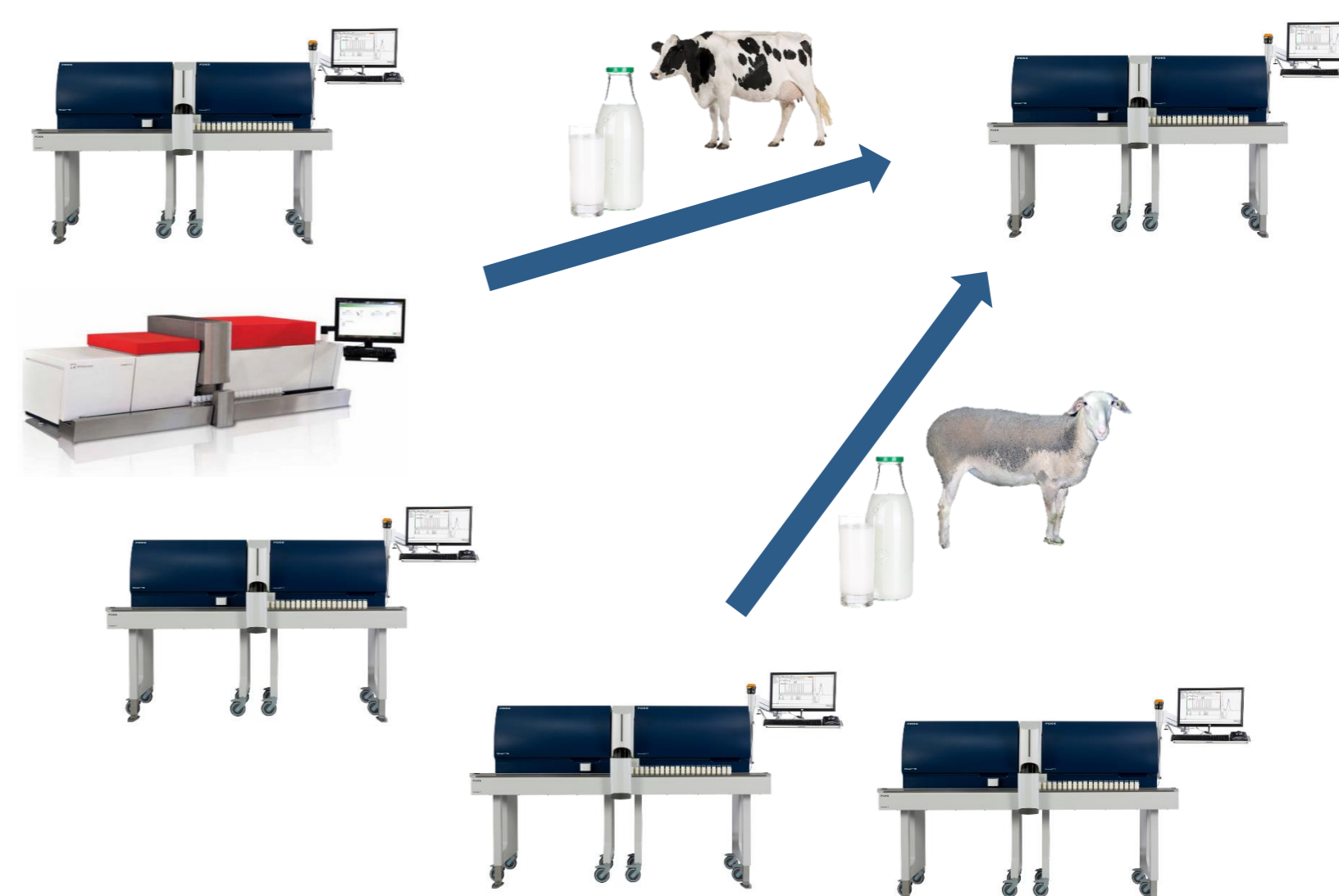
no significant difference (p=0.859) between standardization with cow milk samples or ewe milk samples

Method



Matching of 5 secondary instruments (4 Foss® & 1 Delta Instrument®) into the format of a reference instrument

Generation of 2 sets of standardization coefficients, by analyzing:

- 5 cow milk standard samples
- or
- 5 ewe milk standard samples



Specific constitution of 2 sets of standard samples:

	Ewe milk standard samples			Cow milk standard samples	
	Fat%	Protein%		Fat%	Protein%
	2.9	3.0	2.7	2.7	
	8.0	4.6	5.8	3.1	
	3.8	6.4	2.7	4.0	
	6.2	7.6	5.7	4.4	
	4.3	5.7	4.0	3.5	

Comparison of standardization performances by analyzing an external set of ewe milk standard samples (external validation)

Evaluation by looking at the difference (RMSE: Root mean square error) between fat predictions of secondary and reference instruments, after standardization with 2 sets of coefficients

Conclusions

Similar results observed with cow and ewe milk-based sets of coefficients to standardize ewe milk spectra.

Possibility to use the cow standard milks in order to harmonize and use MIR spectra of ewe milk.